effect, tightened inspection shall be instituted when two out of five consecutive portions of production have been rejected.

(4) *Tightened inspection to normal inspection.* When tightened inspection is in effect, normal inspection shall be reinstituted when five consecutive portions of production have been considered acceptable.

(c) When the rules require a switch in the inspection status because of one or more classes of defects, all classes of defects shall be inspected under the new inspection criteria. At the option of the user of the service, and when approved by the Administrator, such user may elect to remain on normal inspection when qualified for reduced inspection, or on tightened inspection when qualified for normal inspection.

§ 42.136 Applicability of other procedures.

When appropriate, the procedures for classifying and recording defects in § 42.106 and for appeal inspections in § 42.108 also apply to on-line sampling and inspection.

Subpart E—Miscellaneous

AUTHORITY: Agricultural Marketing Act of 1946, as amended (7 U.S.C. 1621 *et seq.*).

§ 42.140 Operating Characteristic (OC) curves for on-line sampling and inspection.

(a) This section contains the Operating Characteristic (OC) curve for each of the sampling plans given in Tables I, I-A, II, II-A, III, and III-A. The OC curve and the corresponding sampling plans are listed by AQL.

(b) Different acceptance and rejection criteria are provided for each AQL. The criteria for each AQL must be obtained from the applicable sampling plan tables.

(c) The curves show the ability of the various sampling plans to distinguish between good and bad lots. This can be illustrated by examining OC curve 6 for an AQL of 0.25 defects per hundred units in the Reduced and Normal Inspection Plans. If the quality of the lots submitted for inspection is poorer than the AQL of 0.25 defects per hundred units, fewer lots will be accepted. For example, OC curve 6 shows that when the quality of lots submitted for inspection is 1.0 defects per hundred units, only 26 percent of the lots are expected to be accepted. Conversely when the quality of the lots submitted for inspection is better than the AQL of 0.25 defects per hundred units, most lots are expected to be accepted. For example, the same OC curve 6 shows that when the quality of lots submitted for inspection is 0.10 defects per hundred units, about 99 percent of the lots are expected to be accepted.

(d) The table of sampling plans that correspond to OC curve 6 can be found over the curves for an AQL of 0.25 defects per hundred units in the Reduced and Normal Inspection Plan. An examination of this table reveals that there is one single and one double sampling plan that have OC curves comparable to OC curve 6. The first plan listed is a single plan requiring the inspection of 500 individual containers. Under this plan the lot is accepted as meeting the requirements for an AQL of 0.25 if there are 3 or less defects in the sample or rejected if there are 4 or more defects in the sample.

(e) The next plan that is listed in the column headed 6 for an AQL of 0.25 is a double sampling plan that requires the initial inspection of 228 individual containers. The lot will be accepted as meeting the requirements of an AQL of 0.25 if there are no defects in the sample, and rejected if there are 3 or more defects in the sample. In the event that the number of defects is between the acceptance (0) and rejection (3) numbers, additional containers must be inspected. In this case, the table indicates that a total of 516 containers must be inspected before a decision can be made to either accept or reject the lot. This will require the inspection of 288 more containers (516 − 228 = 288).

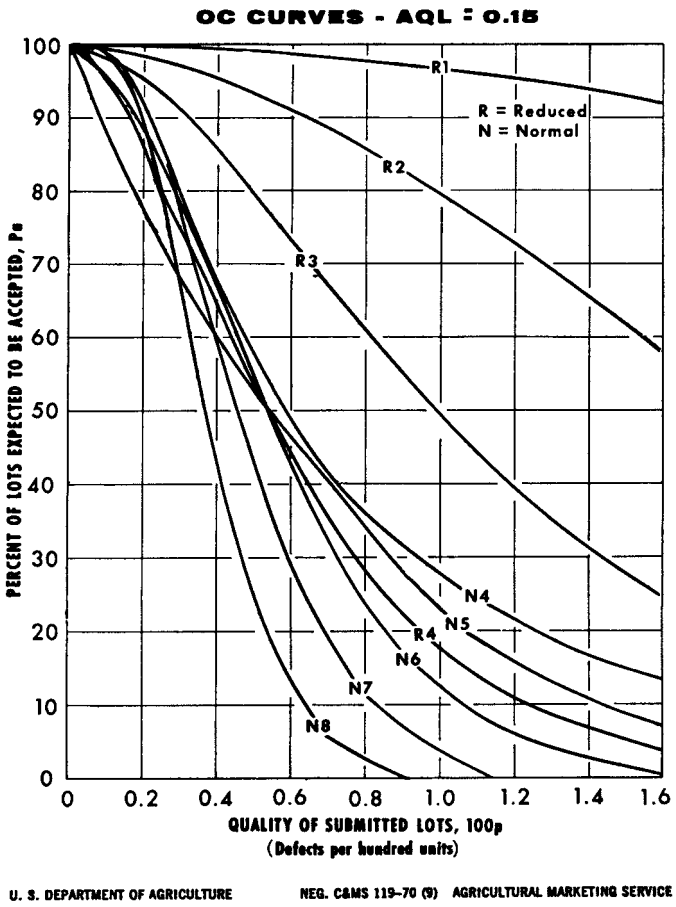
If there are 3 or less defects in the total sample, the lot will be accepted. If there are 4 or more defects in the total sample, the lot will be rejected. The other double sampling plans operate in a similar manner with the only differences being the sample sizes and acceptance and rejection numbers.

REDUCED AND NORMAL INSPECTION PLANS—SAMPLING PLANS AND OPERATING CHARACTERISTIC (OC) CURVES FOR AQL=0.15 DEFECTS PER HUNDRED UNITS

[Sampling plans—AQL=0.15]

Comparable sampling plans	Identification number of OC curve																										
	R1			R2			R3			R4			N4			N5			N6			N7			N8		
	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re
Single	29	1	2	84	1	2	126	0	1	315	1	2	168	1	2	264	1	2	500	2	3	800	3	4	1,250	4	5
Double	18	0	2	36	0	2	.....	....	....	.....	....	....	120	0	2	174	0	2	252	0	3	456	0	4			
	36	1	2	96	1	2	.....	....	....	.....	....	....	180	1	2	336	1	2	540	2	3	864	3	4			

n_c=Cumulative sample size. Ac=Acceptance number. Re=Rejection number.

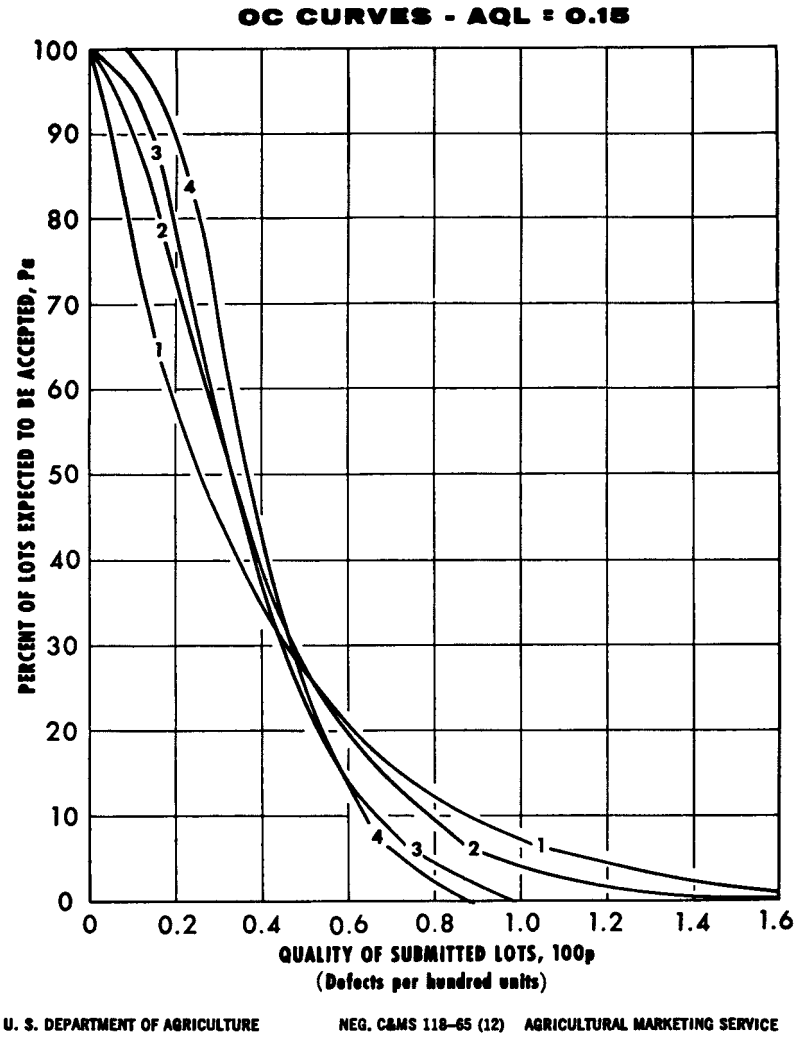

OC CURVES - AQL = 0.15
R = Reduced
N = Normal
R1
R2
R3
R4
N4
N5
N6
N7
N8
PERCENT OF LOTS EXPECTED TO BE ACCEPTED, Pa
QUALITY OF SUBMITTED LOTS, 100p
(Defects per hundred units)
U. S. DEPARTMENT OF AGRICULTURE
NEG. C&MS 119-70 (9) AGRICULTURAL MARKETING SERVICE

TIGHTENED INSPECTION PLANS—SAMPLING PLANS AND OPERATING CHARACTERISTIC (OC) CURVES FOR AQL=0.15 DEFECTS PER HUNDRED UNITS

[Sampling plans—AQL=0.15]

Comparable sampling plans	Identification number of OC curves											
	1			2			3			4		
	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re
Single	264	0	1	500	1	2	800	2	3	1,250	3	4
Double	.....	.....	.....	360	0	2	456	0	3	576	0	3
	.....	.....	.....	516	1	2	864	2	3	1,296	3	4

n_c=Cumulative sample size. Ac=Acceptance number. Re=Rejection number.

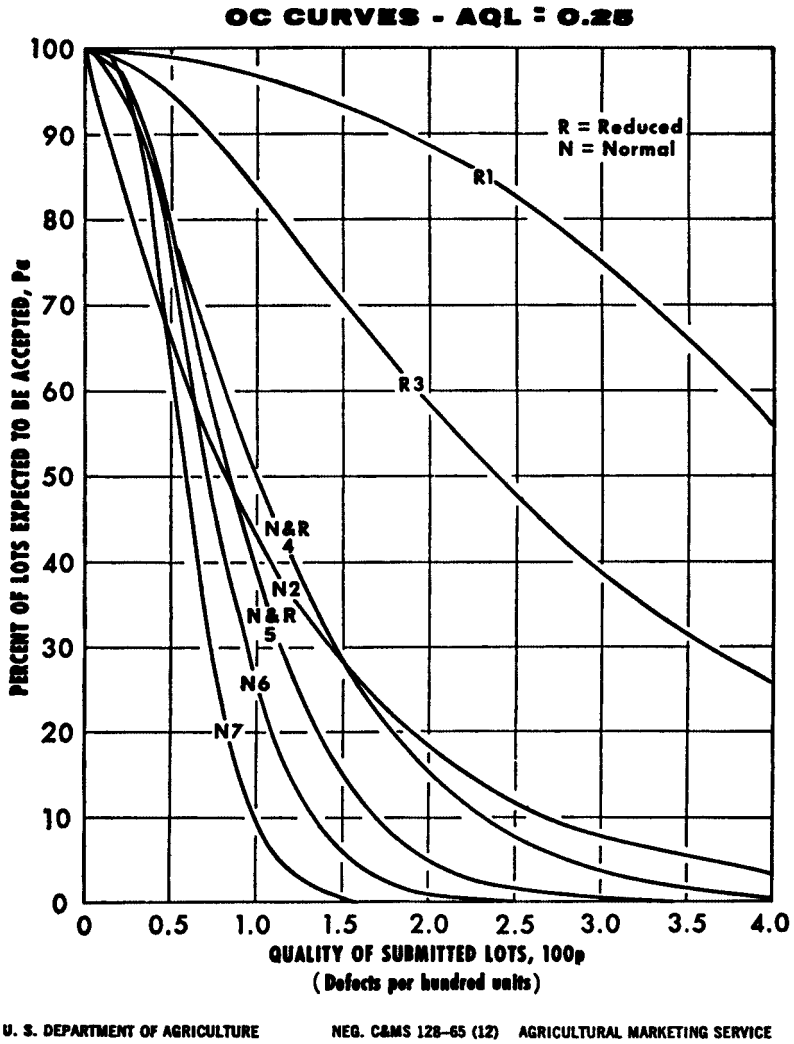


REDUCED AND NORMAL INSPECTION PLANS—SAMPLING PLANS AND OPERATING CHARACTERISTIC (OC) CURVES FOR AQL=0.25 DEFECTS PER HUNDRED UNITS

[Sampling plans—AQL=0.25]

Comparable sampling plans	Identification number OC curves																			
	R1			N2			R3			N and R4			N and R5			N6			N7		
	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re
Single	29	1	2	84	0	1	84	1	2	168	1	2	315	2	3	500	3	4	800	4	5
Double	18	0	2	....	36	0	2	120	0	2	168	0	3	228	0	3					
	18	1	2	....	96	1	2	180	1	2	348	2	3	516	3	4					

n_c=Cumulative sample size. Ac=Acceptance number. Re=Rejection number.

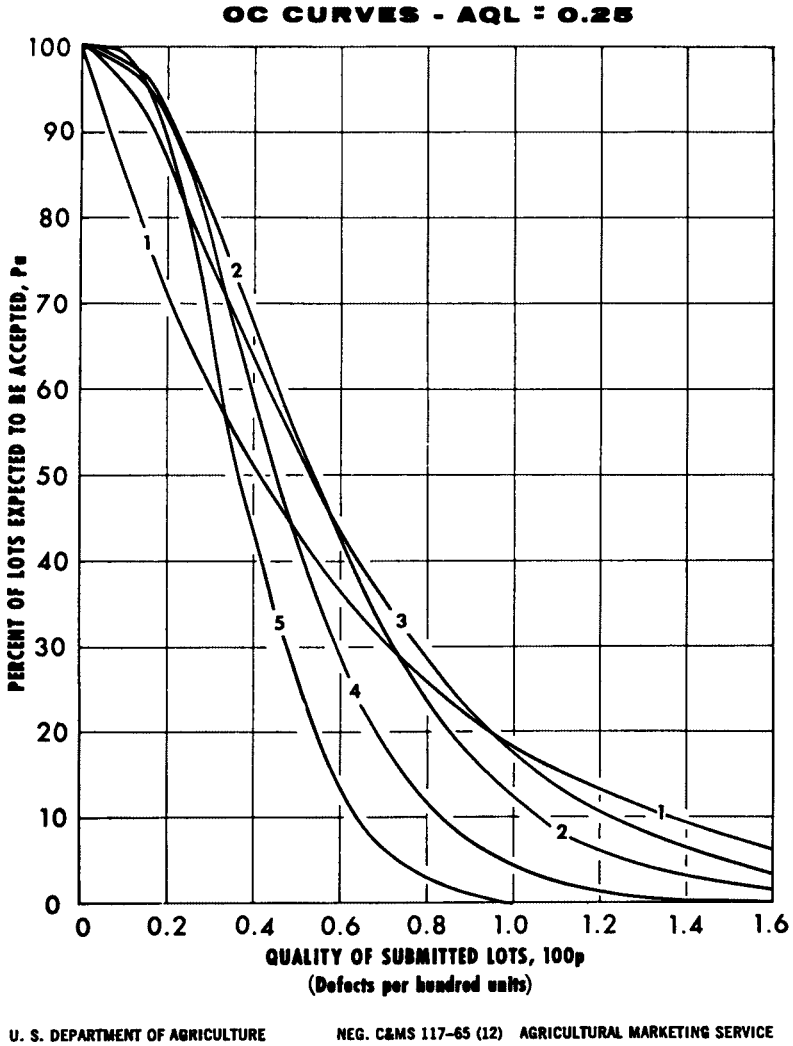


TIGHTENED INSPECTION PLANS—SAMPLING PLANS AND OPERATION CHARACTERISTICS (OC) CURVES FOR AQL=0.25 DEFECTS PER HUNDRED UNITS

[Sampling plans—AQL=0.25]

Comparable sampling plans	Identification number of OC curves														
	1			2			3			4			5		
	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re
Single	168	0	1	315	1	2	500	2	3	800	3	4	1,250	4	5
Double	....	....	....	168 348	0 1	2 2	228 516	0 2	3 3	456 864	0 3	4 4			

n_c=Cumulative sample size. Ac=Acceptance number. Re=Rejection number.

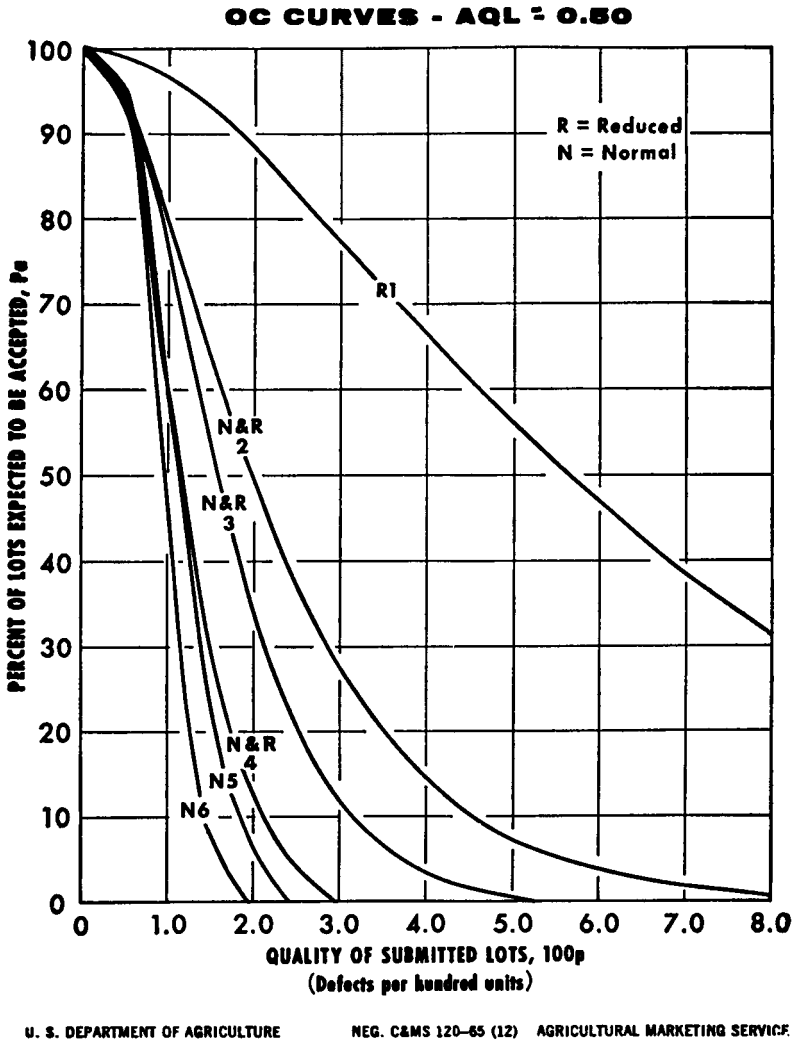


REDUCED AND NORMAL INSPECTION PLANS—SAMPLING PLANS AND OPERATING CHARACTERISTIC (OC) CURVES FOR AQL=0.50 DEFECTS PER HUNDRED UNITS

[Sampling plans—AQL=0.50]

Comparable sampling plans	Identification number of OC curves																	
	R1			N and R2			N and R3			N and R4			N5			N6		
	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re
Single	29	1	2	84	1	2	168	2	3	315	3	4	500	5	6	800	7	8
Double	18	0	2	36	0	2	120	0	3	168	0	4	228	0	5			
	36	1	2	96	1	2	180	2	3	348	3	4	516	5	6			

n_c=Cumulative sample size. Ac=Acceptance number. Re=Rejection number.

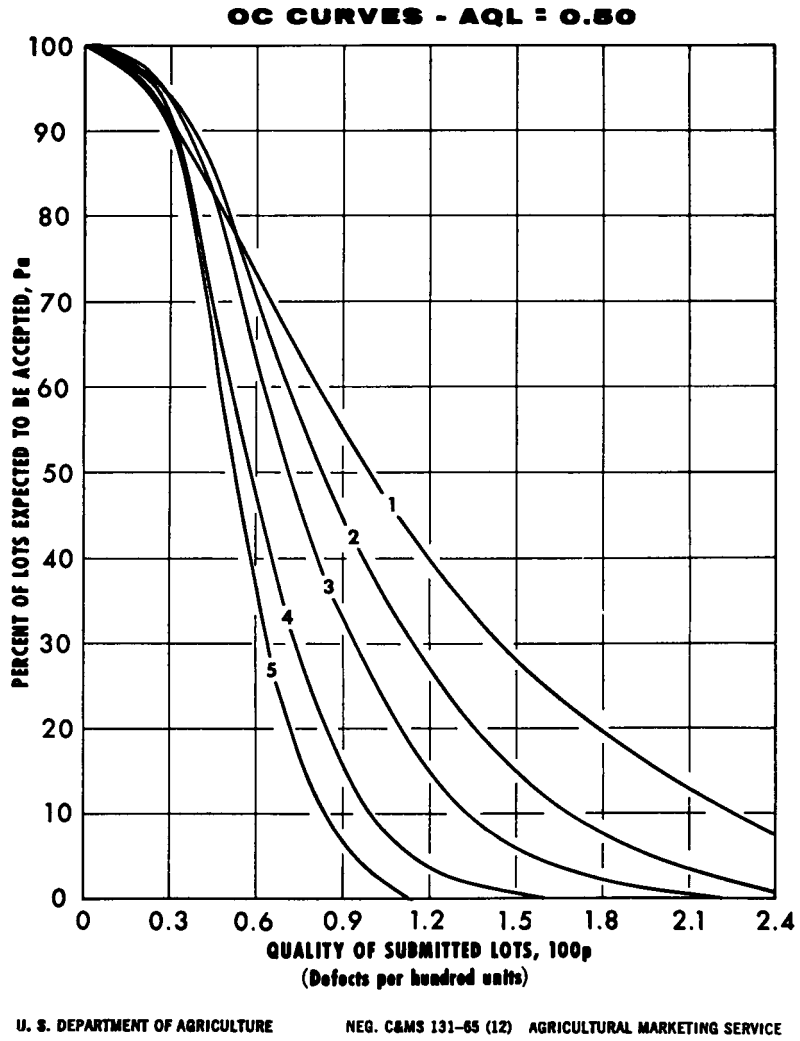


TIGHTENED INSPECTION PLANS—SAMPLING PLANS AND OPERATING CHARACTERISTIC (OC) CURVES FOR AQL=0.50 DEFECTS PER HUNDRED UNITS

[Sampling plans—AQL=0.50]

Comparable sampling plans	Identification number of OC curves														
	1			2			3			4			5		
	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re
Single	168	1	2	315	2	3	500	3	4	800	4	5	1,250	6	7
Double	120	0	2	168	0	3	228	0	3	456	1	5			
	180	1	2	348	2	3	516	3	4	864	4	5			

n_c=Cumulative sample size. Ac=Acceptance number. Re=Rejection number.

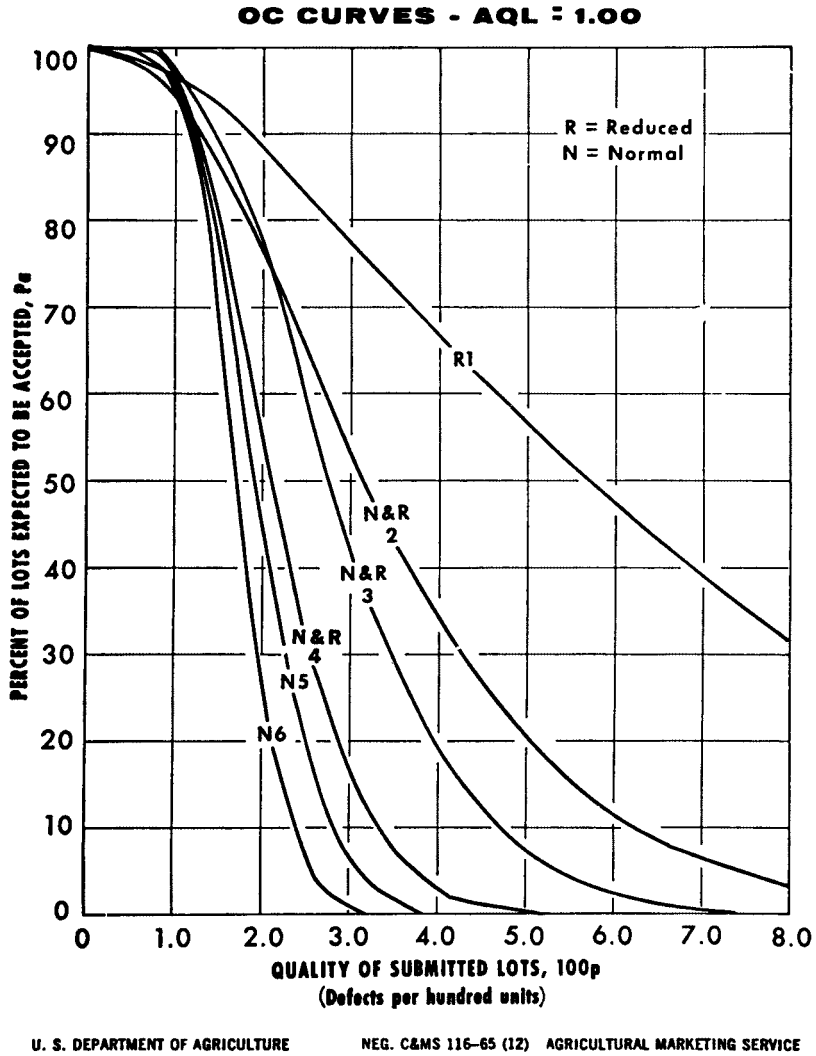


REDUCED AND NORMAL INSPECTION PLANS—SAMPLING PLANS AND OPERATING CHARACTERISTIC (OC) CURVES FOR AQL=1.00 DEFECTS PER HUNDRED UNITS

[Sampling plans—AQL=1.00]

Comparable sampling plans	Identification number of OC curves																	
	R1			N and R2			N and R3			N and R4			N5			N6		
	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re
Single	29	1	2	84	2	3	168	4	5	315	6	7	500	9	10	800	13	14
Double	18 36	0 1	2 2	36 96	0 2	3 3	120 180	2 4	5 5	168 348	1 7	5 8	228 516	2 9	7 10			

n_c=Cumulative sample size. Ac=Acceptance number. Re=Rejection number.

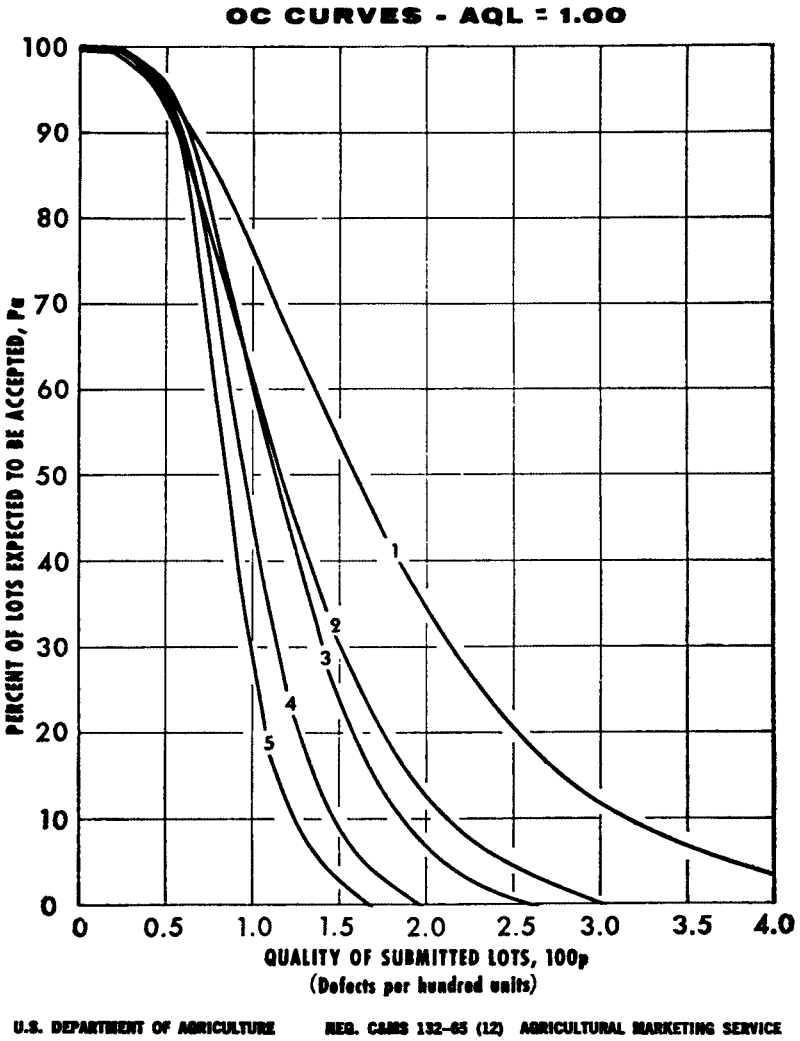


TIGHTENED INSPECTION PLANS—SAMPLING PLANS AND OPERATING CHARACTERISTIC (OC) CURVES FOR AQL=1.00 DEFECTS PER HUNDRED UNITS

[Sampling plans—AQL=1.00]

Comparable sampling plans	Identification number of OC curves														
	1			2			3			4			5		
	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re
Single	168	2	3	315	3	4	500	5	6	800	7	8	1,250	10	11
Double	120	0	3	168	0	4	228	0	5	456	2	6			
	180	2	3	348	3	4	516	5	6	864	8	9			

n_c=Cumulative sample size Ac=Acceptance number. Re=Rejection number.

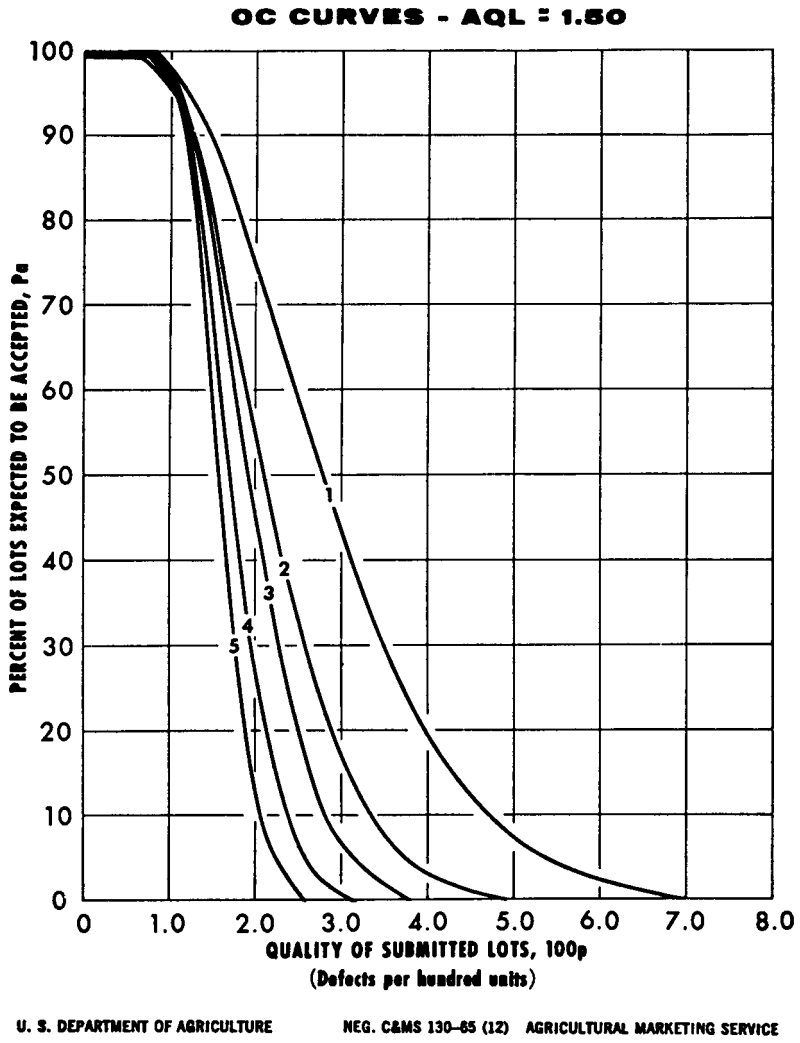


REDUCED AND NORMAL INSPECTION PLANS—SAMPLING PLANS AND OPERATING CHARACTERISTIC (OC) CURVES FOR AQL=1.50 DEFECTS PER HUNDRED UNITS

[Sampling plans—AQL=1.50]

Comparable sampling plans	Identification number of OC curves																	
	R1			N and R2			N and R3			N and R4			N5			N6		
	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re
Single	29	1	2	84	3	4	168	5	6	315	8	9	500	12	13	800	18	19
Double	18	0	2	36	0	4	120	2	6	168	2	7	228	3	9			
	36	1	2	96	3	4	180	5	6	348	9	10	516	12	13			

n_c=Cumulative sample size. Ac=Acceptance number. Re=Rejection number.

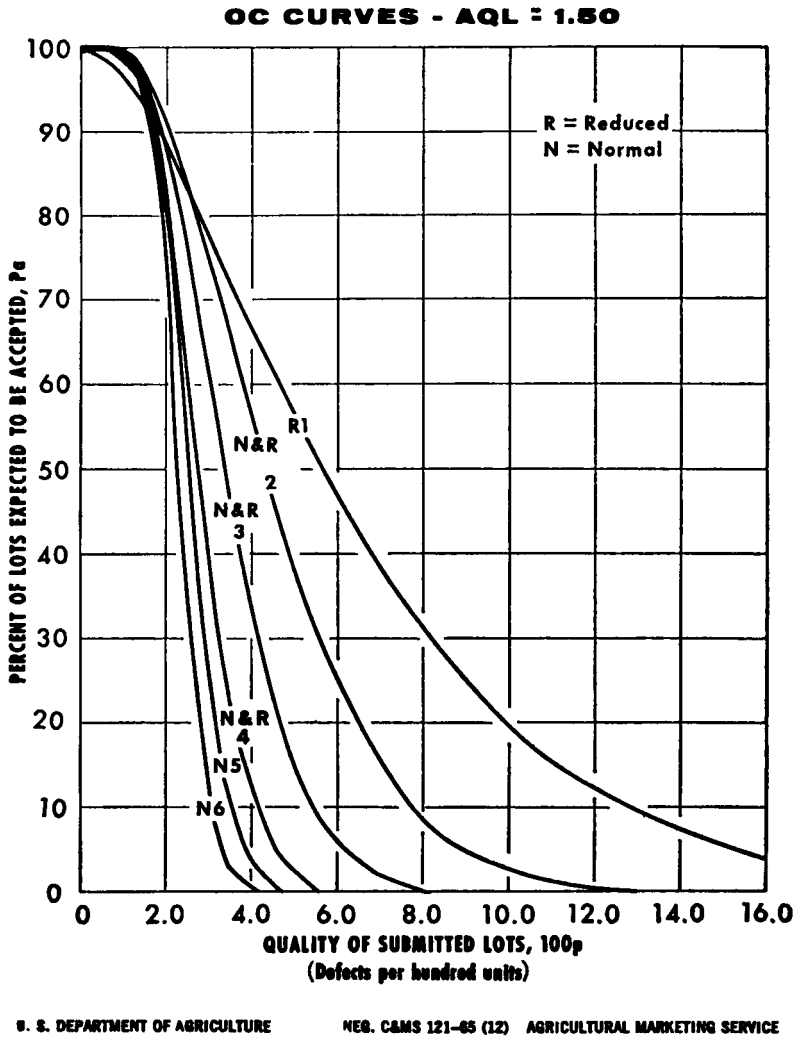


TIGHTENED INSPECTION PLANS—SAMPLING PLANS AND OPERATING CHARACTERISTIC (OC) CURVES FOR AQL=1.50 DEFECTS PER HUNDRED UNITS

[Sampling plans—AQL=1.50]

Comparable sampling plans	Identification number of OC curves														
	1			2			3			4			5		
	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re
Single	168	4	5	315	6	7	500	9	10	800	13	14	1,250	19	20
Double	120	2	5	168	1	5	228	2	7	456	5	10			
	180	4	5	348	7	8	516	9	10	864	14	15			

n_c=Cumulative sample size. Ac=Acceptance number. Re=Rejection number.

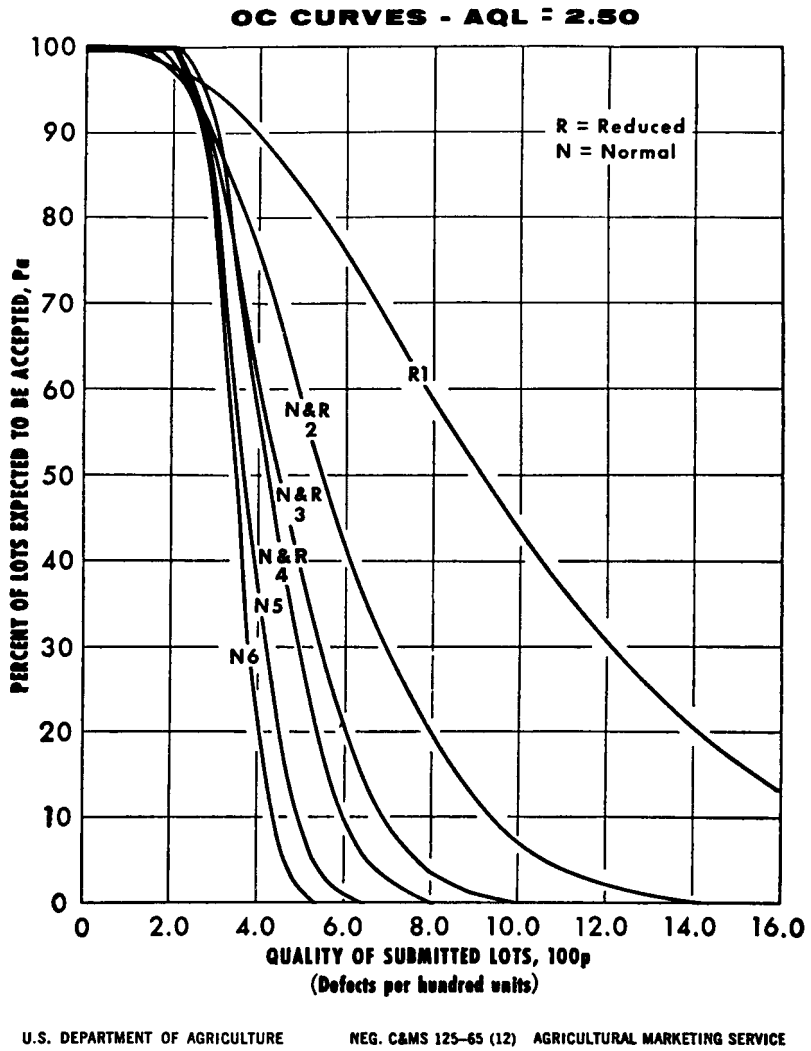


REDUCED AND NORMAL INSPECTION PLANS—SAMPLING PLANS AND OPERATING CHARACTERISTIC (OC) CURVES FOR AQL=2.50 DEFECTS PER HUNDRED UNITS

[Sampling plans—AQL=2.50]

Comparable sampling plans	Identification number of OC curves																	
	R1			N and R2			N and R3			N and R4			N5			N6		
	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re
Single	29	2	3	84	4	5	168	7	8	315	13	14	500	18	19	800	27	28
Double	18	0	3	36	0	4	120	3	7	168	5	10	228	5	11			
	36	2	3	96	4	5	180	8	9	348	14	15	516	19	20			

n_c=Cumulative sample size. Ac=Acceptance number. Re=Rejection number.

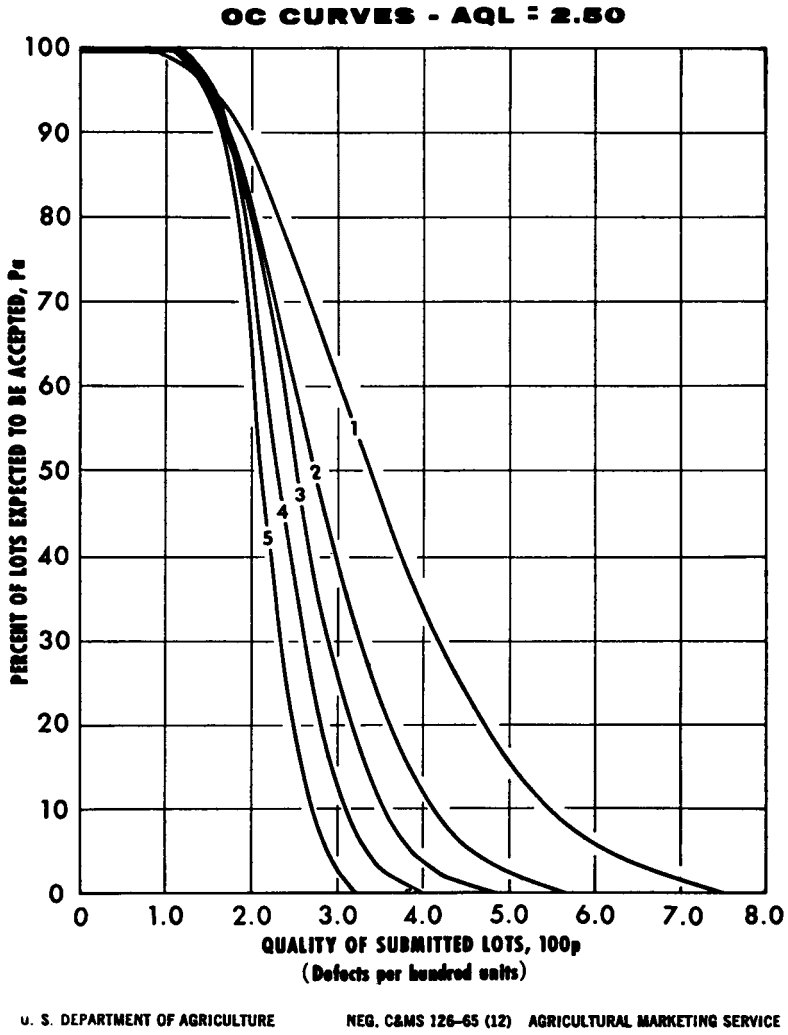


TIGHTENED INSPECTION PLANS—SAMPLING PLANS AND OPERATING CHARACTERISTIC (OC) CURVES FOR AQL=2.50 DEFECTS PER HUNDRED UNITS

[Sampling plans—AQL=2.50]

Comparable sampling plans	Identification number of OC curves														
	1			2			3			4			5		
	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re
Single	168	5	6	315	8	9	500	12	13	800	18	19	1,250	26	27
Double	120	2	6	168	2	7	228	3	9	456	8	13			
	180	5	6	348	9	10	516	12	13	864	19	20			

n_c=Cumulative sample size. Ac=Acceptance number. Re=Rejection number.

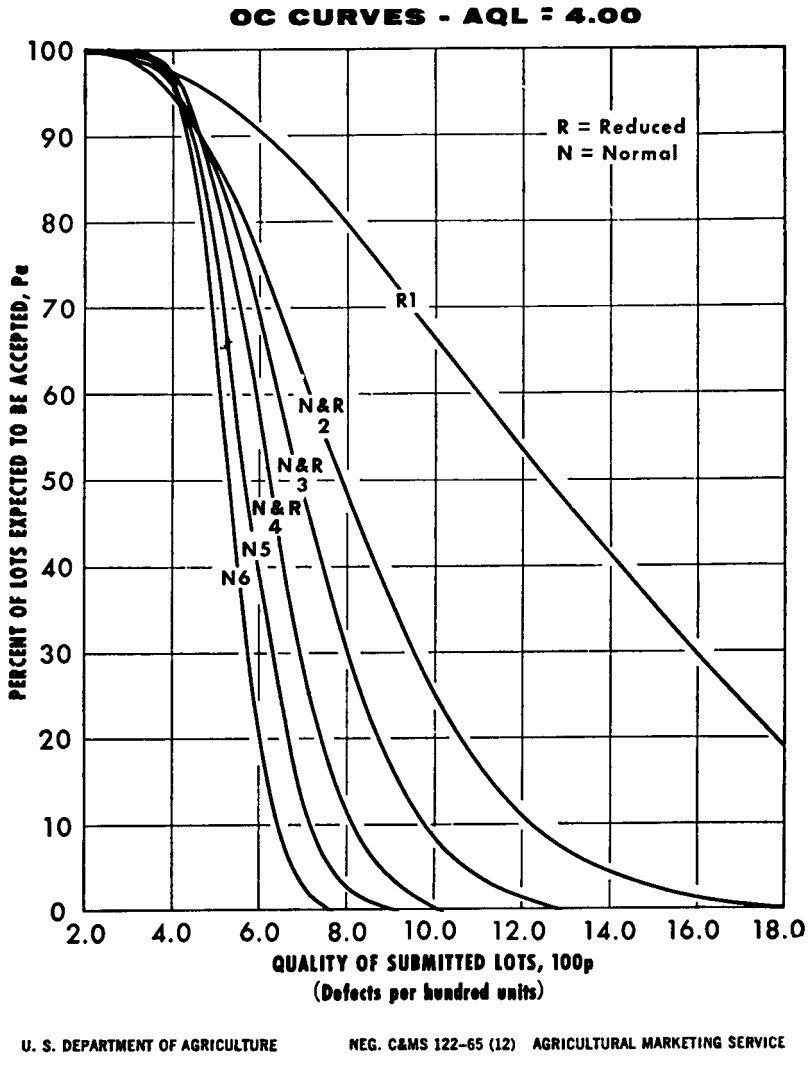


REDUCED AND NORMAL INSPECTION PLANS—SAMPLING PLANS AND OPERATING CHARACTERISTIC (OC) CURVES FOR AQL=4.00 DEFECTS PER HUNDRED UNITS

[Sampling plans—AQL=4.00]

Comparable sampling plans	Identification number of OC curves																	
	R1			N and R2			N and R3			N and R4			N5			N6		
	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re
Single	29	3	4	84	6	7	168	11	12	315	19	20	500	28	29	800	42	43
Double	18 36	1 4	3 5	36 96	0 7	5 8	120 180	6 12	10 13	168 348	7 21	13 22	228 516	8 29	17 30			

n_c=Cumulative sample size. Ac=Acceptance number. Re=Rejection number.

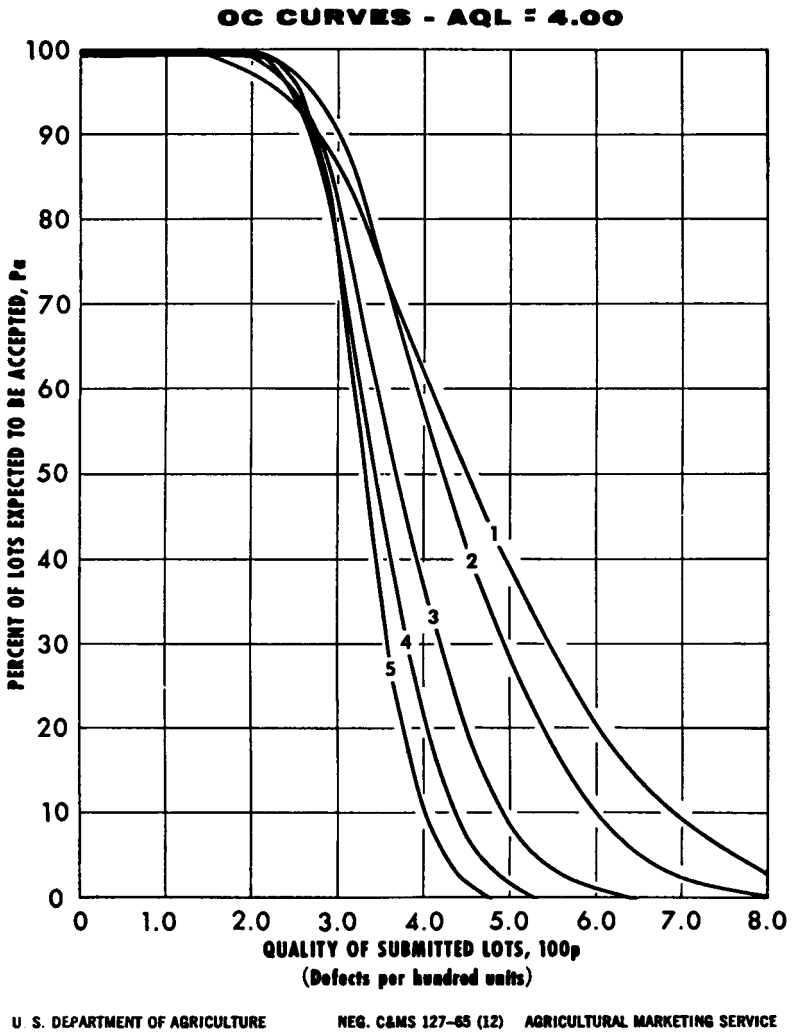


TIGHTENED INSPECTION PLANS—SAMPLING PLANS AND OPERATING CHARACTERISTIC (OC) CURVES FOR AQL=4.00 DEFECTS PER HUNDRED UNITS

[Sampling plans—AQL=4.00]

Comparable sampling plans	Identification number of OC curves														
	1			2			3			4			5		
	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re
Single	168	7	8	315	13	14	500	18	19	800	27	28	1,250	41	42
Double	120	3	7	168	5	10	228	5	11	456	12	19			
	180	8	9	348	14	15	516	19	20	864	29	30			

n_c=Cumulative sample size. Ac=Acceptance number. Re=Rejection number.

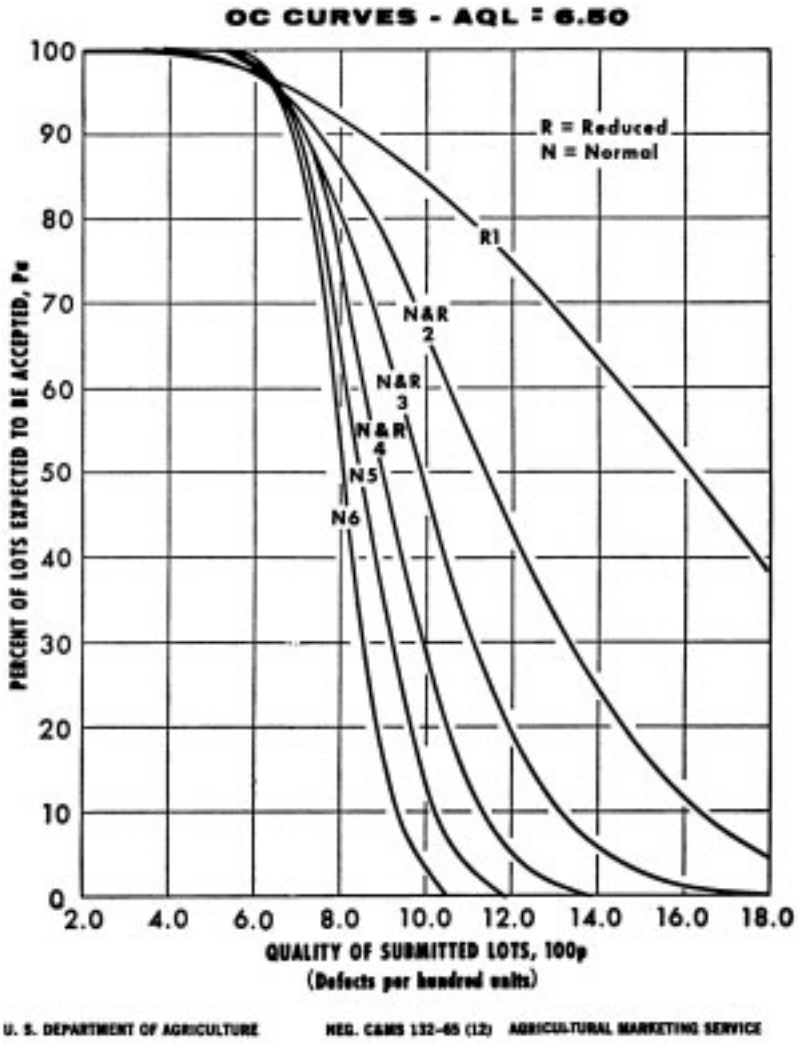


REDUCED AND NORMAL INSPECTION PLANS—SAMPLING PLANS AND OPERATING CHARACTERISTIC (OC) CURVES FOR AQL=2.50 DEFECTS PER HUNDRED UNITS

[Sampling plans—AQL=6.50]

Comparable sampling plans	Identification number of OC curves																	
	R1			N and R2			N and R3			N and R4			N5			N6		
	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re
Single	29	4	5	84	9	10	168	16	17	315	28	29	500	42	43	800	64	65
Double	18 36	1 5	4 6	36 96	2 10	7 11	120 180	10 17	14 18	168 348	12 31	18 32	228 516	15 43	24 44			

n_c=Cumulative sample size. Ac=Acceptance number. Re=Rejection number.

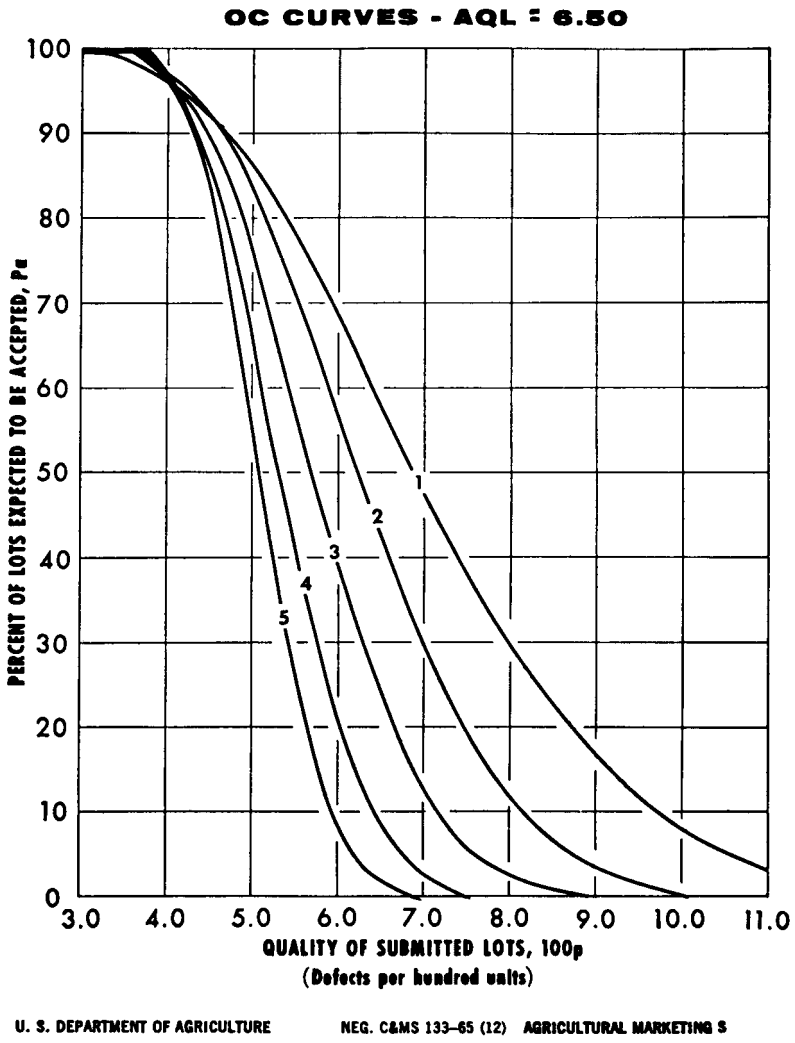


TIGHTENED INSPECTION PLANS—SAMPLING PLANS AND OPERATING CHARACTERISTIC (OC) CURVES FOR AQL=6.50 DEFECTS PER HUNDRED UNITS

[Sampling plans—AQL=6.50]

Comparable sampling plans	Identification number of OC curves														
	1			2			3			4			5		
	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re
Single	168	11	12	315	19	20	500	28	29	800	42	43	1,250	63	64
Double	120	6	10	168	7	13	228	8	17	456	21	28			
	180	12	13	348	21	22	516	29	30	864	44	45			

n_c=Cumulative sample size. Ac=Acceptance number. Re=Rejection number.

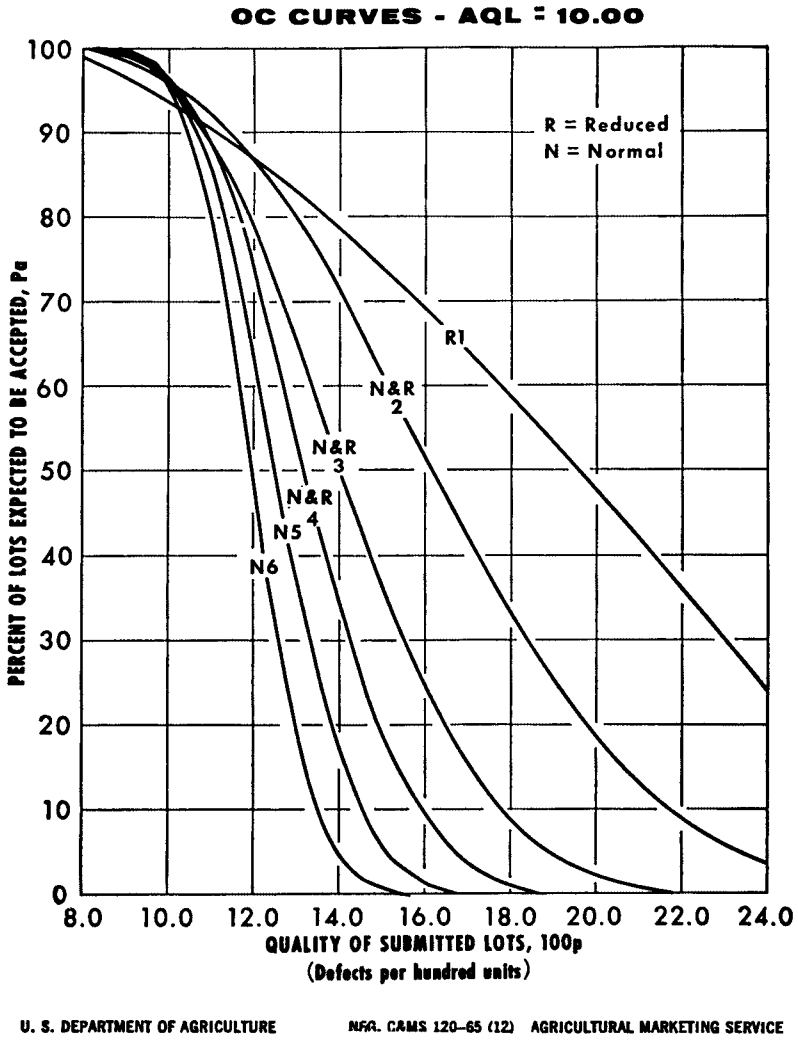


REDUCED AND NORMAL INSPECTION PLANS—SAMPLING PLANS AND OPERATING CHARACTERISTIC (OC) CURVES FOR AQL=10.00 DEFECTS PER HUNDRED UNITS

[Sampling plans—AQL=10.00]

Comparable sampling plans	Identification number of OC curves																	
	R1			N and R2			N and R3			N and R4			N5			N6		
	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re
Single	29	5	6	84	13	14	168	23	24	315	41	42	500	62	63	800	95	96
Double	18 36	2 6	5 7	36 96	3 15	9 16	120 180	14 25	19 26	168 348	19 45	26 46	228 516	23 64	34 65			

n_c=Cumulative sample size. Ac=Acceptance number. Re=Rejection number.

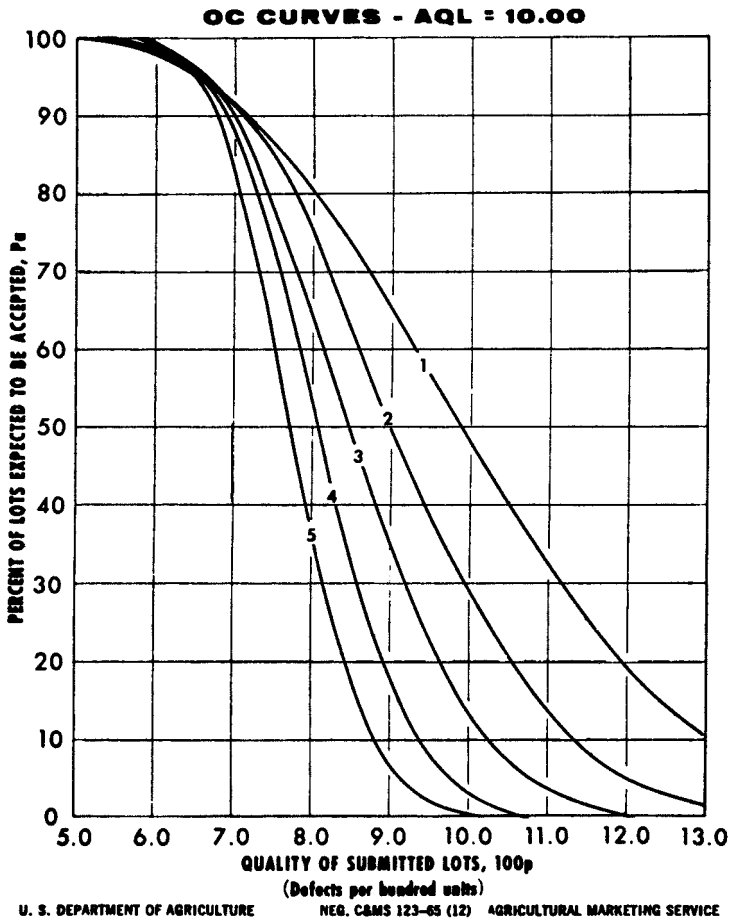


TIGHTENED INSPECTION PLANS—SAMPLING PLANS AND OPERATING CHARACTERISTIC (OC) CURVES FOR AQL=10.00 DEFECTS PER HUNDRED UNITS

[Sampling plans—AQL=10.00]

Comparable sampling plans	Identification number of OC curves														
	1			2			3			4			5		
	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re	n_c	Ac	Re
Single	168	16	17	315	28	29	500	42	43	800	64	65	1,250	96	97
Double	120	10	14	168	12	18	228	15	24	456	32	41			
	180	17	18	348	31	32	516	43	44	864	69	70			

n_c=Cumulative sampling size. Ac=Acceptance number. Re=Rejection number.



[31 FR 4687, Mar. 19, 1966; 31 FR 4949, Mar. 25, 1966, as amended at 36 FR 18457, Sept. 15, 1971. Redesignated at 41 FR 42640, Sept. 28, 1976 and 42 FR 32514, June 27, 1977, further redesignated at 45 FR 69424, Oct. 21, 1980 and 46 FR 63203, Dec. 31, 1981]